

TO: Stew Messman
FROM: Darrel Anderson
SUBJECT: Newhalem STP
DATE: March 19, 1973

State of
Washington
Department of
Ecology



On February 22, 1973, an efficiency survey was conducted at the Newhalem STP. The survey period was from 0830 to 1700 hours, compositing every hour. The plant is new and in very good appearance, with good security.

Melvin Mohn, the operator, indicated a washout problem due to oversizing of the plant for tourist season. This can be identified with the high total coliform of 40,000 to 110,000/100 ml, and dilute mixed liquor. Also, COD and total solids reduction was about 50 percent.

DA:bj

(EFFICIENCY STUDY)

City Newhalem Plant Type Secondary Population >230 Design 230 at 120 gpd
 Served Capacity
 Receiving Water Upper Skagit River Engineer Don Simms
 Date 2-22-73 Survey Period 0830-1700 Survey Personnel Darrel Anderson
 Comp. Sampling Frequency every hour Weather Conditions clear, warm
 (last 48 hours)
 Sampling Aliquot 1000 ml

PLANT OPERATION

Total Flow 1,416.0 g/hour How Measured "V" notch weir
 Max. (Flow) 29.7 g/min Time of Max. 0830 Min. 13.6 g/min Time of Min. 1530
 Pre Cl₂ 0 #/day Post Cl₂ 2 1/2 #/day

FIELD RESULTS

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	14	10	11.5	11	10	9	9.3	10
pH	9.4	6.8	7.6	7.6	6.8	6.4	6.4	6.4
Conductivity (umhos/cm)	NOT DETERMINED				NOT DETERMINED			
Settleable Solids	4.5	1.5	3.3	1.5	3.0	3.0	3.0	3.0

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
	73-802	73-803	
5-Day BOD	NOT DETERMINED		
COD	366	163	55
T.S.	330	223	53
T.N.V.S.	136	90	54
T.S.S.	93	104	--
N.V.S.S.	10	14	--
pH	7.6	7.2	--
Conductivity	320	270	--
Turbidity	42	32	--

Newhalem STP

BACTERIOLOGICAL RESULTS

$\text{Na}_2\text{S}_2\text{O}_3$ added to sample before sample XXXXX was taken. XXXXX

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)	Cl Residual	
			ppm	(after secs)
73-804	0830	40,000	>.1	3 min.
73-805	1030	40,000	.2	3 min.
73-806	1200	110,000	>.7	3 min.
73-807	1230	40,000	.2	3 min.
73-808	1430	80,000	>.6	3 min.
73-809	1630	90,000	.5	3 min.

Operator's Name Melvin Mohn Phone # _____

Comments: _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO: D. Anderson
COPIES TO:
.....
.....
LAB FILES.....

Source Newhalen STP

Collected By P.A.

Date Collected 2-22-73

Goal, Pro./Obj. _____

Log Number:	73-	802	803	804	805	806	807	808	809	STORET
Station:	10F	11F	0930	1030	1200	1250	1430	1630		
pH	7.6	7.2								00403
Turbidity (JTU)	42	32								00070
Conductivity (μ mhos/cm) ^{25°C}	320	270								00095
COD	366	163								00340
BOD (5 day)										00310
Total Coliform (Col./100ml)	-	-	40,000	40,000	116,000	40,000	80,000	90,000		31504
Fecal Coliform (Col./100ml)	-	-	<200	<200	<200	<200	<200	<200		31616
NO ₃ -N (Filtered)										00620
NO ₂ -N (Filtered)										00615
NH ₃ -N (Unfiltered)										00610
T. Kjeldahl-N (Unfiltered)										00625
O-PO ₄ -P (Filtered)										00671
Total Phos.-P (Unfiltered)										00665
Total Solids	330	223								00500
Total Non Vol. Solids	136	90								
Total Suspended Solids	93	104								00530
Total Sus. Non Vol. Solids	10	14								

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10⁻³) prior to entry into STORET

Summary By Debra S. Kell Date 2-1-73

U.S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
**SEWAGE TREATMENT PLANT OPERATION AND MAINTENANCE
PRACTICES QUESTIONNAIRE**

STANDARD FORM NO. 42-11527

CHECK ONE <input type="checkbox"/> 1ST AUDIT <input type="checkbox"/> RE-AUDIT	DATE OF AUDIT	PLANT DESCRIPTION (See Official Use Only)
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A. GENERAL INFORMATION

1. PROJECT (State, Number) HAWAII DECA	SCOPE OF PROJECT (new plant, addition, etc.) RECONSTRUCTION TO 20,000 GPD 20, 1977
2. PLANT LOCATION (City, County) AIEHA, HONOLULU	IDENTIFICATION OF AREAS SERVED TOWN OF AIEHA

3. POPULATION

3A. FRACTION OF AREA POPULATION SERVED (%)	3B. PLANT DESIGN (population equivalent) 230 AT 1200 PPM CAPITA	3C. SERVED BY PLANT (domestic) DOMESTIC POPULATION
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4. TYPE OF COLLECTION SYSTEM

4A. <input type="checkbox"/> COMBINED <input checked="" type="checkbox"/> SEPARATE <input type="checkbox"/> BOTH	4B. ESTIMATED FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, etc.) 2300 GPD		
5. YEAR COMMUNITY BEGIN SEWAGE TREATMENT 1964	6. YEAR PRESENT SYSTEM PLACED IN OPERATION		
5A. SIZE OF PLANT SITE (acres) 1.5 ACRES OF ACRES	6A. SEWER 1964 & 1977	6B. PLANT 1977	6C. BUILDING CODE

7A. SIZE OF PLANT SITE (acres) 1.5 ACRES OF ACRES	7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres) 4.5 ACRES OF ACRES
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8A. IN THE SPACE PROVIDED BELOW FURNISH A SIMPLIFIED FLOW DIAGRAM OR A WRITTEN DESCRIPTION OF THE PLANT UNITS IN FLOW SEQUENCE. INCLUDE THE METHOD OF ULTIMATE SOLIDS DISPOSAL. SHOW APPROXIMATE NUMBER OF STABILIZATION POND'S AND NUMBER OF CELLS. INDICATE WHETHER FLOW TO AND FROM PLANT IS BY PUMPING OR GRAVITY.

AIEHA DOMESTIC SEWAGE HAS TWO LIFT STATIONS AND GRAVITY CONTINUOUS FLOW INTO TREATMENT. THE EFFLUENT HAS GRAVITY FLOW. THE WASTE IS REDUCED BY AERATION TREATMENT AND WILL BE DANCED BY PUMPING AND BURIAL IN GOLF.

8B. NOTE ANY SIGNIFICANT OR UNIQUE PROCESSING CONDITIONS. THE PLANT HAS BEEN OVERSIZED BY APPROXIMATELY 75% TO ACCOMMODATE A 20,000 GPD PLANT IN 2 MONTHS WHEN THE TOURISTS ARE IN TOWN.

B. RECEIVING STREAM

9A. NAME OF STREAM KAIKAI RIVER	9B. STREAM FLOW IS <input checked="" type="checkbox"/> PERMANENT <input type="checkbox"/> INTERMITTENT <input type="checkbox"/> NATURAL <input type="checkbox"/> REGULATED	<input type="checkbox"/> INTERSTATE <input type="checkbox"/> INTRASTATE <input type="checkbox"/> COASTAL
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C. CURRENT PERFORMANCE AND PLANT LOADING INFORMATION

1A. ANNUAL AVERAGE DAILY FLOW RATE (MGD) 10,000	1B. FLOW VARIATION (MGD) DRY WEATHER: 5,000 WET WEATHER: 15,000	1C. MINIMUM FLOW RATE (MGD) 2,000
2. AVERAGE FLOW OF FRESHWATER (MGD) (PPM)	3. AVERAGE BOD LOAD (MGD) (PPM)	4. AVERAGE SOLIDS LOAD (MGD) (PPM)
5. AVERAGE BOD LOAD (MGD) (PPM)	6. AVERAGE SOLIDS LOAD (MGD) (PPM)	7. AVERAGE EQUIPMENT DENSITY OF WASTEWATER
8A. BOD LOAD (MGD) (PPM)	8B. SOLIDS LOAD (MGD) (PPM)	8C. EQUIPMENT DENSITY (PPM)

7. DOES PLANT HAVE STANDBY POWER GENERATOR FOR PUMPING FACILITIES? YES NO
 7B. ADEQUATE ALARM SYSTEM FOR PUMP OR EQUIPMENT FAILURE? YES NO
 8. ARE CHLORINATION FACILITIES PROVIDED? YES NO
 IF YES, ANSWER 8A THRU G. IF NO, EXPLAIN REASON FOR INTERMITTENT CHLORINATION

8A. PURPOSE OF CHLORINATION
DISINFECTING EFFLUENT TO CONFIRM WITH REGULATION STANDARDS

8B. TYPE OF CHLORINATOR
WALACE & TIERNAN VAVTCH

8C. POINT OF APPLICATION OF CHLORINE
CHLORINE CONTACT TANK

8D. CAN BYPASSED SEWAGE BE CHLORINATED?
 YES NO

8E. AVERAGE FEED RATE OF CHLORINE (lb/day)
25 LBS

8F. CHLORINE RESIDUAL IN EFFLUENT
2.5 PPM AT END OF _____ MINUTES

8G. MINIMUM SUPPLY OF CHLORINE STORED ON PREMISES (lb)
2000 LBS WHEN CHLORINE BOTTLES AVAILABLE AT PLANT

8H. ANALYST
SR

9. ARE FACILITIES PROVIDED FOR COMPLETE BYPASS OF RAW SEWAGE? *NO*
 YES NO IF YES, ANSWER A THRU G BELOW, ANSWER H IN EITHER CASE.

9A. FREQUENCY (times monthly)
NEVER

9B. AVERAGE DURATION (hours)

9C. REASON FOR BYPASSING
PLANT MAINT

9D. ESTIMATED FLOW RATE DURING BYPASS IS
 WITHIN HYDRAULIC CAPACITY OF PLANT
 BEYOND HYDRAULIC CAPACITY OF PLANT BY

9E. DOES SEWAGE OVERFLOW IN DRY WEATHER?
 YES NO

9F. TYPE OF DIVERSION STRUCTURE
NO BYPASS STRUCTURE

9G. AGENCIES NOTIFIED OF BYPASS ACTION
NO

9H. DO OPERATORS HAVE OPTION TO BYPASS INDIVIDUAL PLANT UNITS? (If no, has this caused any operational problems?)
 YES NO

10A. ARE BACK FLOW DEVICES PROVIDED AT ALL CONNECTIONS TO CITY WATER SUPPLY? (If no, explain)
 YES NO *NO DIRECT CONNECTIONS*

10B. CHECK TYPE OF BACK FLOW PREVENTION DEVICE
 DOUBLE CHECK VALVE PRESSURE OPERATED PHYSICAL DISCONNECT OTHER (specify)

11. USES OF TREATMENT PLANT EFFLUENT
NO USES

12. USES OF RECEIVING STREAM WITHIN 10 MILES OF OUTFALL
FISHING

13. HAVE THERE BEEN ANY GDOOR COMPLAINTS BEYOND THE PLANT PROPERTY? (If yes, explain)
 YES NO

14. OBSERVED APPEARANCE AND CONDITION OF EFFLUENT, RECEIVING STREAM, OR DRAINAGE WAY
ALL RELATIVELY CLEAR

STABILIZATION PONDS

A. WEEDS CUT AND VEGETATIVE GROWTH IN PONDS ELIMINATED? <input type="checkbox"/> YES <input type="checkbox"/> NO	D. DAMS AND DICES MAINTAINED (FENCING ETC.)? <input type="checkbox"/> YES <input type="checkbox"/> NO
C. FENCING AND MAINTENANCE - "POLLUTED WATER" SIGNS PRESENT AND IN GOOD REPAIR? <input type="checkbox"/> YES <input type="checkbox"/> NO	G. FREQUENCY OF INSPECTION BY OPERATOR
E. WATER DEPTH (feet) _____ HIGH _____ LOW _____ MEDIUM	
F. ADEQUATE CONTROL OF DEPTH? <input type="checkbox"/> YES <input type="checkbox"/> NO	H. SEEPAGE REPORTED? <input type="checkbox"/> YES <input type="checkbox"/> NO
I. ANY ALGAE GROWTH - "FOUL" WATER CONTAMINATION FROM POND (If yes, give details)? <input type="checkbox"/> YES <input type="checkbox"/> NO	

J. UNDISGUISED POLLUTING PROBLEM? <input type="checkbox"/> YES <input type="checkbox"/> NO	K. IF YES, NAME OF SPECIES IF KNOWN	L. CAN SURFACE RUN-OFF ENTER POND? <input type="checkbox"/> YES <input type="checkbox"/> NO
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C. SUPERVISORY SERVICES

1. IS A CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATING AND MAINTENANCE PROBLEMS?
 YES NO IF YES IS IT ON: CONTINUING BASIS OR UPON REQUEST BASIS
 IF CONTINUING BASIS, WHAT IS THE FREQUENCY OF VISITS.

2. DO OPERATORS AND OTHER PERSONNEL ROUTINELY ATTEND SHORT COURSES, SCHOOLS OR OTHER TRAINING ACTIVITIES?
 YES NO
 IF YES, CITE COURSE SPONSOR AND DATE OF LAST COURSE ATTENDED
 IF NO, DO YOU KNOW OF ANY COURSES AVAILABLE TO SERVE THIS AREA
NOT AT PRESENT

3A. ARE ALL EQUIPMENT AND PARTS OF THE PRESENT PLANT STILL IN OPERATION? YES NO (If no, explain)

B. ARE PROCESSING UNITS OPERATING AT DESIGN EFFICIENCY?
 YES NO (If no, explain)
PLANT WAS OVERSIZED TO HANDLE AN UNUSUAL PEAK IN SUMMER MONTHS AND THERE IS DIFFICULTY DURING THE WINTER MONTHS

4. HAVE THERE BEEN ANY DIFFICULTIES WITH THE SEWAGE TREATMENT PLANT?
 A. STRUCTURAL YES NO (If yes, explain)

B. MECHANICAL YES NO (If yes, explain)

C. OPERATIONAL YES NO (If yes, explain) *CAUSED TO CUT BACK ON SOLIDS IN AERATION TANK FOR PROPER PERFORMANCE. MIXED LIQUOR IS TOO DILUTE.*

D. BASED ON OPERATING EXPERIENCE TO DATE WHAT IF ANY CHANGES WOULD YOU RECOMMEND TO IMPROVE OPERATION OF THE PLANT?
I WOULD RECOMMEND AN INCREASE IN THE WATER AND SOLID RATIO IN THE LIQUOR. MORE ORGANIC LOADS WOULD BE BENEFICIAL.

THE OPERATION OF THIS FACILITY MAINTAINED BY YES NO
 (If maintained, check journal items in body)

REPORTED BY YES NO
 TO WHOM?

FREQUENCY	SCATHER	FLOW	SLUDGE HANDLED	CHEMICALS USED	REGISTER	GRT HANDLED	ELEC. USED	COST DATA	AIR USED	MAINTENANCE	OTHER
DAILY	X									X	
WEEKLY											
MONTHLY											
ANNUALLY											

6. ARE LABORATORY RECORDS MAINTAINED? (check appropriate box)

NOT AT ALL DAILY WEEKLY MONTHLY ANNUALLY

IF MAINTAINED CHECK FORM OF RECORD BELOW:

LOG BOOK TABULAR SHEET SEPARATE BY OPERATION CONTROL CHARTS GRAPHS

WHAT PLANT AND/OR LABORATORY EQUIPMENT, GAGES AND METERS ARE CALIBRATED PERIODICALLY?

7. IS LABORATORY TESTING ADEQUATE FOR THE CONTROL REQUIRED FOR THIS SIZE AND TYPE OF PLANT?

YES NO (If no, explain)

B. INDUSTRIAL WASTES DISCHARGED TO MUNICIPAL SYSTEM	A. NUMBER AND TYPES OF INDUSTRIES DISCHARGING TO SYSTEMS
C. POPULATION EQUIVALENT (POD) OF INDUSTRIAL WASTES (pr)	C. POPULATION EQUIVALENT (PE) OF INDUSTRIAL WASTES (pr)
D. VOLUME OF INDUSTRIAL WASTE (mgd)	E. COMPOSITION AND CHARACTERISTICS OF INDUSTRIAL WASTES
F. MAIN DIFFICULTY EXPERIENCED WITH INDUSTRIAL WASTE (explain)	

8. HAVE INDUSTRIAL EFFLUENT PROBLEMS BEEN SOLVED? YES NO (If yes, how?)

9A. METHOD OR METHODS USED TO ASSESS INDUSTRIAL WASTE TREATMENT COST (check appropriate box)

NO CHARGE BY CITY PROPERTY TAX WATER USE ASSESSMENT CHARGE BASED ON FLOW
 CHARGED BASED ON BOD CHARGE BASED ON SS OTHER METHODS (describe)

COMMENT ON HOW CHARGE IS COLLECTED (fixed charge, sliding scale, etc.)

9B. IS INDUSTRIAL WASTE ORDINANCE IN EFFECT AND ENFORCED? YES NO

10. WHO PROVIDED INITIAL INSTRUCTION IN THE OPERATION OF THE PLANT?
 CITY WATER ENGINEERS AND A PROFESSIONAL

11. IS A MANUAL OF PRACTICE OR INSTRUCTIONS AVAILABLE? YES NO
 IF YES, WHO WROTE AND PROVIDED IT?
 CITY WATER ENGINEERS

12. ESTIMATE OF MAN-HOURS PER WEEK DEVOTED TO LABORATORY WORK AND MAINTENANCE OF RECORDS AND REPORTS.
 20 HOURS

13. PLANT PERSONNEL (check all appropriate skills for Man-Hour Year Reported in Section 12)

JOB CATEGORY	NUMBER	TOTAL MAN-HOURS PER WEEK	TOTAL NUMBER CERTIFIED OR LICENSED	RANGE IN YEARS EMPLOYED AT PRESENT PLANT	MIN. AN. FEELS QUALIFIED TO PERFORM
1. SUPERINTENDENT					
2. OPERATORS					
3. LABORATORY TECHNICIANS					
4. LABORERS					
5. PART-TIME LABORERS					
6. TOTAL					

E. LABORATORY CONTROL

Enter test codes opposite appropriate items. If any of the below tests are used to monitor industrial wastes place an "X" in addition to the test code.

CODES

1 - 7 or more per week 2 - 1, 2, or 3 per week 3 - 2 or 3 per month 7 - Quarterly 9 - Annually
 2 - 4, 5 or 6 per week 4 - as required 6 - 1 per month 8 - Semi-Annually

ITEM	RAW	PRIMARY EFFLUENT	MIXED LIQUOR	FINAL	SLUDGE		DIGESTOR	RECEIVING STREAM
					RAW	SUPER-NATANT		
1. BOD								
2. SUSPENDED SOLIDS								
3. SETTLEABLE SOLIDS	3		3	3				
4. SUSPENDED VOLATILE								
5. DISSOLVED OXYGEN			4					
6. TOTAL SOLIDS								
7. VOLATILE SOLIDS								
8. pH				3				
9. TEMPERATURE			3	4				
10. COLIFORM DENSITY								
11. RESIDUAL CHLORINE				3				
12. VOLATILE ACIDS								
13. M. B. STABILITY								
14. ALKALINITY								
15.								
16.								
17.								
18.								
19.								

F. OPERATION AND MAINTENANCE COST FOR PLANT

YEAR OF OPERATION	SALARIES/WAGES	ELECTRICITY	CHEMICALS	MAINTENANCE	OTHER ITEMS	TOTAL
MOST CURRENT YEAR 19						
PRIOR YEAR 19						
PRIOR YEAR 19						
PRIOR YEAR 19						

EVALUATION PERFORMED BY	TITLE	ORGANIZATION

INFORMATION FURNISHED BY	TITLE	ORGANIZATION	DATE

G. NOTATIONS BY EVALUATOR

1. ADDITIONAL REMARKS (If remarks refer to a particular item, identify by number)

2. GENERAL COMMENTS ON HOUSEKEEPING AND MAINTENANCE

2000 and 2001 live - just this year

3. REQUIREMENTS OF HIGHER AUTHORITY

3A. DOES THE PLANT PROVIDE THE DEGREE OF TREATMENT PRESENTLY REQUIRED BY THE STATE? (If no, explain)

YES NO

3B. ARE THERE ANY PENDING ACTIONS (enforcement conferences, change in water quality standards, etc.) THAT WOULD REQUIRE UPGRADING OF TREATMENT BY THIS PLANT?

YES NO (If yes, explain)

3C. NUMBER OF STATE INSPECTIONS OF PRESENT PLANT TO DATE. *

4. IS ANY FOLLOW-THRU ACTION REQUIRED TO (1) CORRECT DEFICIENCIES IN THE PLANT OR ITS OPERATION OR (2) RESOLVE INDUSTRIAL WASTE PROBLEMS? (If yes, describe required corrective action)

YES NO